

## California Department of Health and Human Services (DHS)

### VARICELLA CASE AND OUTBREAK 'QUICKSHEET' (May 29, 2003)

**Infectious agent:** Human (alpha) herpesvirus 3 (varicella-zoster virus, VZV), a member of the *Herpesvirus* group.

**Mode of transmission:** From person to person by direct contact, droplet or airborne spread of vesicle fluid or secretions of the respiratory tract of chickenpox cases or of vesicle fluid of patients with herpes zoster. In contrast to vaccinia and variola, scabs from varicella lesions are not infective.

**Incubation period:** From 2 to 3 weeks; commonly 14-16 days; may be prolonged in the immunodeficient.

**Period of Communicability:** As long as 5 but usually 1-2 days before rash onset, and continuing until all lesions are crusted (usually about 5 days). Chickenpox is one of the most readily communicable diseases, especially just before and in the early stages of the eruption. Susceptibles have about an 80%-90% risk of infection after household exposure to varicella. Susceptible individuals should be considered potentially infectious 10 – 21 days following exposure and if they develop varicella, until vesicles are crusted over.

#### CDC CASE DEFINITION and CASE CLASSIFICATION

**Clinical Case Definition:** An illness with acute onset of diffuse (generalized) papulovesicular rash without other apparent cause. Note: In vaccinated persons who develop varicella more than 42 days after vaccination (breakthrough disease), the disease is almost always mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculopapular with few or no vesicles).

#### Case Classification:

**Probable:** A case that meets the clinical case definition is not laboratory confirmed, and is not epidemiologically linked to another probable or confirmed case.

**Confirmed:** A case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed or probable case. **Note:** Two probable cases that are epidemiologically linked are considered confirmed cases.

#### CLINICAL FEATURES

##### Prodrome

- In children, rash is often the first sign of disease. Moderate fever may be present for first few days of illness.
- Adults may have 1-2 days of fever and malaise prior to rash onset.

##### Rash

- The rash consists of maculopapules, vesicles and scabs in varying stages of evolution. Skin lesions initially contain vesicular fluid, but over a very short period of time they pustulate and scab. Successive crops of lesions appear for 3-4 days. The typical case has about 250-500 lesions.
- Breakthrough infection in a previously vaccinated person is generally very mild with fewer than 50 lesions that may not become vesicular (fluid-filled blister) or itchy.

##### Complications

- The risk of complications increases after puberty and is also higher in newborns exposed in utero; complications are infrequent among healthy children. Immunocompromised persons have a high risk of serious infection.
- The most common complications from varicella include secondary bacterial infections of skin lesions, dehydration, pneumonia, and central nervous system manifestations.
- Infection in pregnancy may be associated with congenital varicella syndrome with a 0.7% risk early in pregnancy and 2% risk at 13-20 weeks gestation. The onset of varicella in pregnant women from 5 days before to 2 days after delivery results in severe varicella infection in an estimated 17-30% of their newborn infants.

#### LABORATORY TESTING AND CONFIRMATION

**Laboratory confirmation:** Laboratory confirmation of cases of varicella is NOT routinely recommended. Laboratory confirmation is recommended for fatal cases and in other special circumstances.

##### Laboratory criteria for diagnosis:

- Isolation or detection of varicella virus from a clinical specimen, such as a swab of the base of a newly ruptured vesicle, vesicular fluid, or crusted lesion, usually using DFA, PCR or viral culture.
- Significant rise in varicella IgG antibody levels between acute and convalescent serum specimens by any standard serological assay.

## RECOMMENDED TREATMENT AND CHEMOPROPHYLAXIS

### Prevention

- Varicella vaccine is effective in preventing infection or modifying the severity of illness if given within 3 days after exposure, possibly up to 5 days. If not exposed, immunization will protect against subsequent exposure.
- Antiviral drugs are not recommended for prophylaxis.
- Varicella immune globulin (VZIG) should be administered within 96 hours of exposure to susceptible persons at high risk for developing severe varicella including those for whom the vaccine is contraindicated (e.g., immunocompromised persons, pregnant women) and to neonates whose mothers have varicella within 5 days before to 2 days after delivery.

### Treatment

- Treatment of varicella is supportive for immunocompetent children.
- Acyclovir and similar agents can reduce the duration and severity of illness if given within 24 hours of rash onset. These drugs should be considered for treatment of immunocompromised persons and other persons at high risk for severe varicella. (See the AAP Red Book.)

## REPORTING AND NOTIFICATION

- Single cases of non-fatal varicella are not reportable, although, case-based reporting of hospitalized varicella cases to the Immunization Branch is recommended.
- Cases of varicella that result in death and outbreaks of any disease are immediately reportable to the DHS.
- To facilitate disease prevention and control, health departments should encourage varicella outbreak reporting in the following situations:  $\geq 5$  cases in children  $< 13$  years of age in a childcare, kindergarten or grade school setting;  $\geq 3$  cases among persons  $\geq 13$  years of age in a high school or college setting;  $\geq 3$  cases in an adult or teen residential institution (e.g., correctional facility, homeless shelter);  $\geq 2$  cases in an acute care health facility.
- Local health departments should also be notified in the following situations (for investigation purposes): Outbreaks associated with severe complications (e.g., pneumonia, encephalitis, or serious infectious complications such as invasive Group A streptococcal infection or hemorrhagic complications); and Outbreaks of  $\geq 15$  cases with multiple breakthrough infections among vaccinated individuals.

## VARICELLA OUTBREAK INVESTIGATION

The main purpose for responding to a varicella outbreak is to prevent transmission to susceptible persons at increased risk of complications of varicella and to offer vaccination to susceptible persons.

- Confirm case/outbreak.
- Identify and notify individuals/groups who have had close contact with the between 2 days before and 5 days after rash onset. Schools should notify parents of children in the same classroom as a confirmed or probable case(s) of varicella. Use the diagram below to help determine cases' period of infection and communicability.

Incubation: 2 to 3 weeks; commonly 14-16 days			Rash	Communicability
-3 wks	-2 wks	- 1 week	Rash Onset	+ 5 days
Onset of rash minus 14 (10-21) days is probable exposure		May have no prodrome before rash, but infectious period still begins <b>2 days prior to rash</b>	Rash emerges in 2-4 crops over 3-4 days, vesicles in each crop need up to 24 hours to become crusted	Up to 5 days after rash onset (when all lesions crusted)
Date:		Date:	Date:	Date:

## STEPS FOR OUTBREAK MANAGEMENT (AS APPROPRIATE)

- Isolate or cohort infective cases until all lesions are crusted (usually about 5 days).
- Identify susceptible exposed persons at high risk for complications (e.g., immunosuppressed persons, pregnant women); recommend VZIG for post-exposure prophylaxis; consider antiviral therapy for active cases.
- Refer susceptible persons for vaccination. If outbreak occurs in a school/daycare center, a notification letter should be sent to parents recommending vaccination of susceptible children. If outbreak occurs in a residential institutional setting, vaccination of susceptible persons (staff and residents) should be considered.
- Exclusion of susceptible pregnant or immunosuppressed persons should be considered on a case-by-case basis.
- Exclusion from school of susceptible children and staff is usually recommended **only** for children or staff who are at risk of serious infection. However, local health authorities may wish to consider excluding susceptible non high-risk pupils after five or more cases have been identified.